Fact Sheet

Aquifer Protection Permit #P-105348
Place ID 19408, LTF 43709
Shadow Ridge Wastewater Treatment Plant

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to A.A.C. R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). The purpose of BADCT is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., local subsurface geology) to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer, or to keep pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	Millennia Investment Corporation
Mailing Address:	6795 S 300 West Midvale, Utah 84047
Facility Name and Location:	Shadow Ridge Wastewater Treatment Plant 475 East Red Hawk Road, Scenic, Arizona 86432 (Mohave County)

Regulatory Status

An application for an Aquifer Protection Permit (APP) for this facility was received on March 23, 2007. This is a new facility and there are no outstanding compliance issues or violations at the time of permit issuance.

Facility Description

Millennia Investment Corporation is authorized to operate the Shadow Ridge Wastewater Treatment Plant (WWTP) with capacity of 0.015 million gallons per day (mgd). The WWTP will be serving Shadow Ridge Subdivision with 71 lots. The wastewater from septic tanks located at each lot of Shadow Ridge Subdivision flows to a collection system and then this primary treated wastewater enters the WWTP. The septic tanks and sewer collection system are part of the WWTP component and do not require any additional permit to construct and operate. The WWTP treatment process consists of an AdvanTex Textile filter system manufactured by Orenco Systems, Inc. The WWTP includes an influent pump station, a 25,000 gallons recirculation tank, nine AdvanTex textile filter units (AX-100) for aeration and nitrification, an upflow filter for de-nitrification, an upflow filter recirculation tank, a textile filter unit for re-aeration, and a UV

disinfection unit. The settled solids shall be hauled off-site for disposal in accordance with state and federal regulations. The effluent will be discharged through subsurface drip disposal system. The depth to groundwater is approximately 260 feet below ground surface and the direction of groundwater flow is to the northwest. The effluent may also be used for beneficial purposes under a valid reclaimed water permit. The WWTP is classified as producing Class B+ reclaimed water pursuant to A.A.C. R18-11, Article 3. The WWTP is designed and constructed according to plans approved by the ADEQ APP and Reuse Unit.

In addition to the APP conditions pertaining to treatment and disposal of sewage sludge, the permittee must also comply with the requirements for sewage sludge disposal, use, and transportation in 40 Code of Federal Regulations (CFR) Part 503 and 18 A.A.C. 9, Article 10.

During the initial start-up period, up to 3,000 gallons per day (gpd), monthly average flow may be hauled off-site to an approved facility as per Section 4.1, TABLE I.

The site includes the following permitted discharging facilities:

Facility	Latitude	Longitude
Shadow Ridge WWTP	36° 46' 51.7" N	114° 02' 23.5" W
Subsurface Disposal Area	36° 46' 50.2" N	114° 02' 24" W

The permittee requested reduction in pathogen removal monitoring from once a day to once a week. According to A.A.C. R18-9-B204 (B)(4)(iii), ADEQ has approved the reduction in monitoring of fecal coliform from daily to weekly. The facility will be provided with an alarm system for UV disinfection unit which will be activated when there is a lack of power. The discharge limit for fecal coliform will be 200 CFU/100 ml. If discharge limit (DL) for fecal coliform is exceeded, the permittee shall conduct verification sampling according to the contingency plan described in Section 2.6.2.2.2 of this permit.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The WWTP is designed to meet the treatment performance criteria for new facilities with a design flow of less than 250,000 gpd as specified in R18-9-B204.

The septic tanks are designed, constructed, operated, and maintained to meet the treatment performance criteria specified in A.A.C. R18-9-A314 and Table III of this permit. The collection system is designed, operated, and maintained to meet the criteria specified in A.A.C. R18-9-E301 and Table III of this permit.

The WWTP will be provided with full noise and odor control. The WWTP meets the required setback distance of 25 feet. All of the WWTP units will be constructed of fiberglass or reinforced concrete.

The facility has provided 20,800 SF of disposal area for effluent disposal. The disposal area will be divided into four fields. A drip system will be provided to distribute the effluent evenly throughout the disposal system.

III. HYDROGEOLOGIC SETTING

The Shadow Ridge WWTP is located within the Basin and Range physiographic province, which is defined by uplifted mountain ranges with intervening alluvial basins created by extensional faulting. The basins and mountains are typically elongated and trend northwest-southeast and typically parallel one another. The WWTP is located in the Mesquite sub-basin in the lower Virgin River valley. The WWTP is located on broad, gently sloping alluvial plain transitioning to arroyos and river terraces near the Virgin River. The basin is filled with Quaternary and Tertiary alluvium which is gradually overlain towards the east by alluvial fan deposits from the nearby Virgin Mountains. The Virgin Mountains are the southern and eastern bedrock boundary to the basin.

The geologic formations observed near the WWTP include Proterozoic granite and gneiss at the Virgin Mountains, Paleozoic sandstone and limestone, and Tertiary lacustrine, fluvial, and pediment deposits including gravel, sand, silt, and clay, overlain locally by basalt and Quaternary alluvium.

The Muddy Creek Formation comprises the upper part of the basin-fill deposits in the Virgin River basin. The Muddy Creek Formation consists from units that are fine-grained, horizontally bedded claystone, siltstone and sandstone to units that are unconsolidated to semi-consolidated clay, silt, sand, gravel, and boulders. The Muddy Creek Formation contains numerous locally distinct aquifers. Groundwater beneath the Shadow Ridge WWTP is contained within the "Virgin River" aquifer, which is divided into two distinct sub-units. The Virgin River Alluvial aquifer is located predominantly north of the Virgin River, and is comprised of floodplain and river terrace alluvium. The Virgin River Basin aquifer is located predominately south of the river, at the Shadow Ridge WWTP, and is comprised mainly of alluvial fan deposits.

The estimated depth to groundwater at the Shadow Ridge WWTP is approximately 260 feet below ground surface (ft bgs). The groundwater flow direction in the aquifer in the vicinity of the Shadow Ridge WWTP is from the southeast to the northwest, towards the Virgin River. There are numerous domestic wells located to the east, cross-gradient, of the Shadow Ridge WWTP. The WWTP should not impact these wells.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

The WWTP is located approximately 1.5 miles from the Virgin River, which drains into Lake Mead. The Virgin River is the only perennial surface water in the vicinity, and there are no other named waterways within 5 miles of the WWTP. There are smaller ephemeral washes located closer to the WWTP.

The Flood Insurance Rate Map (FIRM) for this area prepared by the Federal Emergency Management Agency (FEMA) indicated the WWTP and related subsurface drip lines are not within a 100-year flood plain and should not be affected by flooding.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Depth-to-groundwater in the vicinity of this facility is approximately 260 feet below ground surface and the effluent is expected to meet Aquifer Water Quality Standards (AWQS) at the point of discharge. The effluent will be discharged to subsurface through drip irrigation system. Groundwater monitoring is not currently required in this permit.

Monitoring and Reporting Requirements

To ensure that site operations do not violate Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent shall be collected from the point of discharge from the downstream of UV disinfection unit. The permittee shall monitor the effluent daily for flow rate, weekly for fecal coliform, monthly for total nitrogen, quarterly for metals and for major cations and anions, and semi-annually for volatile organic compounds (see Section 4.2, Table IA in the permit).

The facility is classified for Class B+ reclaimed water. Reclaimed water monitoring (under Table IB) shall be initiated upon commencement of the use of Class B+ reclaimed water for beneficial purposes under A.A.C. R 18-9, article 7, and shall be performed in addition to routine discharge monitoring required under section 4.2, Table IA. To ensure that site operations do not violate the Reclaimed Water Quality Standards for the beneficial use of Class B+ reclaimed water, the permittee shall monitor the reclaimed water at the same effluent sampling point as indicated above. The permittee shall monitor the reclaimed water monthly for total nitrogen and daily for fecal coliform.

Facility inspection and operational monitoring shall be performed on a routine basis (see Section 4.2, Table III in the permit).

Groundwater monitoring is not required at permit issuance. The contingency groundwater monitoring shall be performed at POC monitoring well and up gradient monitoring well according to Compliance Schedule described in Section 3.0.

Point of Compliance (POC)

The location of the POC was determined by an analysis of the pollutant management area (PMA), the discharge impact area (DIA), and groundwater flow direction. The POC location was selected to protect off-site uses of groundwater, verify BADCT performance, and to allow early detection of potential impacts from WWTP discharges. There is one Point of Compliance (POC) designated for the WWTP. POC is located approximately 580 feet west-northwest of the northwest corner of the PMA.

The hazardous/non-hazardous point of compliance has been designated for this facility as identified below:

POC #	POC Location	Latitude	Longitude
POC#1	Located approximately 580 feet west-northwest of the northwest corner of the PMA	36°46'56.8" N	114°02'20.4" W

The contingency groundwater monitoring will be conducted at the Point of Compliance, only if the DL exceeds for six consecutive sampling events for Routine Discharge Monitoring.

Additionally, a contingency up gradient groundwater monitoring well is proposed that would be installed if an aquifer quality limit (AQL) is exceeded for three consecutive sampling events at the POC monitoring well. The contingency well conceptual location is designed to monitor up-gradient groundwater conditions and is identified below:

Well	Monitoring Well Location	Latitude	Longitude
Up Gradient Well # MP	Located approximately 240 feet east-southeast from the northeast corner of the PMA	36°46'49.6" N	114°02'20.4" W

VI. COMPLIANCE SCHEDULE

The following compliance schedule items shall be included in the permit.

Description	Due by:
WWTP Construction:	
The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department for construction of collection system.	Within 30 days of the completion of the construction of collection system.
The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department for installation for septic tanks. The permittee is required to identify each of the septic tanks with the corresponding lot number.	Within 30 days of the installation of the each septic tank.

The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that the WWTP is constructed according to the Department-approved design report or plans and specifications, as applicable.	Prior to discharging under this permit and within 90 days of completion of construction.
The permittee shall notify the cessation of vault and haul.	Within 15 days of the date of the cessation of the vault and haul activity or when flow reaches 3,000 gpd, whichever comes first.
POC Well:	
The permittee shall notify exceedance of discharge Limit (DL) for six consecutive sampling events for Routine Discharge Monitoring.	Notify ADEQ within 30 days of 6th sampling exceedance event.
The permittee shall install POC monitoring well.	Within three months of notification date in the above item.
The permittee shall commence groundwater monitoring at POC well according to Section 4.2, Table IIA.	Within 30 days of installing the POC monitoring well.
The permittee shall submit POC well installation report to ADEQ.	Within 30 days of installing the POC monitoring well.
Up Gradient Well:	
The permittee shall notify exceedance of aquifer quality limit (AQL) for three consecutive sampling events in the POC monitoring well.	Notify ADEQ within 30 days of 3rd sampling exceedance event.
The permittee shall install at up gradient monitoring well.	Within three months of notification date in the above item.
The permittee shall commence groundwater monitoring at up gradient monitoring well for the constituents listed in Section 4.2, Table IIB.	Within 30 days of the installation of the up gradient monitoring well.
The permittee shall submit ambient groundwater monitoring report to ADEQ explaining AQL has exceeded for the POC well. If a higher AQL's are recommended, a permit amendment application must also be submitted to ADEQ.	Within 30 days of completing eight sampling event at the up gradient monitoring well.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

Millennia Investment Corporation has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B).

The WWTP was designed as per the design report prepared, stamped, dated, and signed (sealed) by David Monihan Jr., P.E. (Professional Engineer), Shephard & Wesnitzer, Inc., dated March 23, 2007 and subsequent sealed submittals that served as additions to the design report. A certified operator will be retained for the operation and maintenance of the WWTP.

ADEQ requires that appropriate documents be sealed by an Arizona registered geologist or professional engineer. This requirement is a part of an on-going demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

Millennia Investment Corporation has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The estimated dollar amount demonstrated for financial capability is $15,200 operating costs and $11,600 closing costs. The permittee shall maintain financial capability throughout the life of the facility.

Zoning Requirements

The Shadow Ridge WWTP has been properly zoned for the permitted use and the permittee has complied with all zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(A)(2)(c).

VIII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. .

The public notice for this permit was published in the Kingman Daily Miner on February 23, 2009 under public notice no. 24-09.

Public Comment Period (A.A.C. R18-9-109(A))

The Department shall accept written comments from the public before a significant permit amendment is made. The written public comment period begins on the publication date of the public notice and extends for 30 calendar days. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

IX. ADDITIONAL INFORMATION

Additional information relating to this permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division - Groundwater Section - APP and Reuse Unit
Attn: Shivani Shah
1110 W Washington Street, Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4465